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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,933	07/16/2003	Kang P. Lee	ASPEN-110 CON	8886

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ASPEN AEROGELS INC.

IP DEPARTMENT

30 FORBES ROAD

BLDG. B

NORTHBOROUGH, MA 01532

EXAMINER

KUGEL, TIMOTHY J

ART UNIT PAPER NUMBER

1712

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,933

Applicant(s)

LEE ET AL.

Examiner

Timothy J. Kugel

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2006 and 10 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21, 24, 28-31, 36 and 42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-21, 24, 28-31, 36 and 42 is/are rejected.
- 7) ☒ Claim(s) 10, 13 and 42 is/are objected to.
- 8) ☒ Claim(s) 1-21, 24, 28-31, 36 and 42 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Claims 1-21, 24, 28-31, 36 and 42 are pending as amended on 16 July 2003, claims 22, 23, 25-27, 32-35, 37-41 and 43-47 being cancelled.

Election/Restrictions

2. The election of species requirement regarding the species of the organic or inorganic gel, the metal oxide, and the metal alkoxide in the Office action mailed 6 September 2005 is withdrawn in light of applicant's admission that the species are not patentably distinct in the reply filed on 10 March 2006.
3. Applicant's election of a piezoelectric device as the pulse generation means in the reply filed on 19 July 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the election of species requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)) and is therefore made **FINAL**.

Oath/Declaration

4. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c).

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
6. The first line of the specification should include a reference to the parent application, including its current status.

Claim Objections

7. Claims 10 and 42 are objected to because of the following informalities:

Claim 10 recites, "...wherein the inorganic gel is an oxides of..." and should recite, "...wherein the inorganic gel is an ~~oxides~~ oxide of..."

Claim 42 recites, "...with the solvent liquid-containing wet gels..." and should recite "...with the solvent liquid-containing wet ~~gels~~ gel..."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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8. Claims 20 and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 20, the inclusion of a term within parentheses renders the claim indefinite because it is unclear whether the included term is part of the claimed invention.

Claim 42 recites the limitation "the supercritical carbon dioxide". There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination, claim 42 was construed to recite "A method of exchanging the solvent liquid in a wet gel with a supercritical carbon dioxide fluid..."

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-7, 14, 24 and 28-31 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 5, 9, 10 and 11 of US Patent No. 6,670,402 (Lee '402 hereinafter).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the methods of the patented claims fully embrace the method of the instant claims.

11. Claims 9-12 and 18-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of Lee '402 in view of applicant's admission.

The conflicting claims are not patentably distinct from each other because the methods of the patented claims fully embrace the method of the instant claims in light of applicant's admission that the species of organic or inorganic gel, of metal oxides, and of metal alkoxides are not patentably distinct.

12. Claims 1 and 3-6 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 5, 6, 10, 13, 14, 15, 18, 20 and 24 of US Patent 6,729,042 (Lee '042 hereinafter).

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Although the conflicting claims are not identical, they are not patentably distinct from each other because the methods of the patented claims fully embrace the method of the instant claims.

13. Claims 9-12 and 18-20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of Lee '042 in view of applicant's admission.

The conflicting claims are not patentably distinct from each other because the methods of the patented claims fully embrace the method of the instant claims in light of applicant's admission that the species of organic or inorganic gel, of metal oxides, and of metal alkoxides are not patentably distinct.

14. Claims 1 and 3-6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 10, 13, 15, 17, 18 and 24 of copending Application No. 10/665,181.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the method of the copending claims fully embrace the method of the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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15. Claims 9-12 and 18-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 10, 13, 15, 17, 18 and 24 of copending Application No. 10/665,181 in view of applicant's admission.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the method of the copending claims fully embrace the method of the instant claims in light of applicant's admission that the species of organic or inorganic gel, of metal oxides, and of metal alkoxides are not patentably distinct.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 1, 8-10, 14, 15, 16, 18, 21, 24 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 2,993,005 (Kosmin hereinafter).

Kosmin teaches a method of replacing the solvent above its critical point from a gel—including silica gels—with atmospheric air (evaporating) comprising applying vibratory agitation—which would result in a pressure pulsation—at greater than 1000 cycles per minute, preferably 1000 to 3600 cycles per minute—which calculates to 16-2/3 Hz, preferably 16-2/3 to 60 Hz (Column 1 Lines 9-60).

Regarding claim 21 although the above rejection is not directed to the elected pulse generation means, the rejection is offered in the interest of compact prosecution.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. Claims 2, 11, 12, 19 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kosmin in view of applicant's admission.

Kosmin teaches a method of replacing the solvent above its critical point from a gel—including silica gels—with atmospheric air (evaporating) comprising applying vibratory agitation—which would result in a pressure pulsation—at greater than 1000 cycles per minute, preferably 1000 to 3600 cycles per minute—which calculates to 16-2/3 Hz, preferably 16-2/3 to 60 Hz as detailed above.

Kosmin does not disclose expressly the species of the species of organic gels, metal oxides other than silicon, and the metal alkoxides as claimed; however, applicant has admitted, in the response filed on 10 March 2006, that the species of organic or inorganic gel, of metal oxides, and of metal alkoxides are not patentably distinct.

20. Claims 2-4, 21, 28-31 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent 4,619,908 (Cheng hereinafter) in view of Kosmin.

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Cheng discloses a method of making aerogels produced by hydrolyzing an inorganic alkoxide—including tetraethyl silicates—with a metal—including silicon—removing the solvent using various fluids, including supercritical carbon dioxide and completing the extraction by drying at about 80°C to 100°C, which would also drive-off the supercritical CO₂ (Column 1 Lines 6-11, Column 2 Lines 50-53, Column 5 Lines 22-44 and Column 6 Lines 7-12).

Cheng does not disclose expressly applying pulses to the system.

Kosmin teaches a method of replacing the solvent above its critical point from a gel—including silica gels—with atmospheric air (evaporating) comprising applying vibratory agitation—which would result in a pressure pulsation—at greater than 1000 cycles per minute, preferably 1000 to 3600 cycles per minute—which calculates to 16-2/3 Hz, preferably 16-2/3 to 60 Hz as detailed above.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the application of vibratory agitation of Kosmin in the process of Cheng. The motivation to do so would have been to increase the production of aerogel through the application of shear (Kosmin Column 2 Lines 25-38).

Regarding claim 4, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to pulse the agitation at the frequency and amplitude claimed for the purpose of driving-off all of the solvent, since it has been held that that discovering an optimum value of a result effective variable involves only ordinary skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA).

Regarding claims 28 and 36, although the above rejection is not directed to the elected pulse generation means, the rejection is offered in the interest of compact prosecution.

21. Claims 5-7, 28 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Cheng in view of Kosmin as applied to claims 2-4, 17-21, 28-31 and 36 described above in further view of US Patent 5,295,509 (Suto hereinafter).

Cheng and Kosmin combine to teach a method of making aerogels produced by hydrolyzing an inorganic alkoxide—including tetraethyl silicates—with a metal—including silicon—removing the solvent using various fluids, including supercritical carbon dioxide and completing the extraction by drying at about 80°C to 100°C, which would also drive-off the supercritical CO₂ (Column 1 Lines 6-11, Column 2 Lines 50-53, Column 5 Lines 22-44 and Column 6 Lines 7-12) while applying vibratory agitation as described above.

Cheng and Kosmin do not disclose expressly piezoelectric pulse generation means.

Suto discloses a pulse nozzle wherein two piezoelectric crystal elements drive a member to repeatedly open and close a flow of gas in a pulse manner at frequencies greater than 10 Hz (Abstract, Column 1 Lines 6-25).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate the vibratory pulses in the combined method of Cheng and Kosmin utilizing the pulse nozzle of Suto. The motivation to do so would have been to improve the capacity of the apparatus at a low temperature (Suto Column 1 Lines 6-10).

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Regarding claims 5-7, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to pulse the agitation at the frequency and amplitude claimed for the purpose of driving-off all of the solvent, since it has been held that that discovering an optimum value of a result effective variable involves only ordinary skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA).

22. Claim 21 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kosmin in view of Suto.

Kosmin teaches a method of replacing the solvent above its critical point from a gel—including silica gels—with atmospheric air (evaporating) comprising applying vibratory agitation—which would result in a pressure pulsation—at greater than 1000 cycles per minute, preferably 1000 to 3600 cycles per minute—which calculates to 16-2/3 Hz, preferably 16-2/3 to 60 Hz as detailed above.

Kosmin does not disclose expressly piezoelectric pulse generation means.

Suto discloses a pulse nozzle wherein two piezoelectric crystal elements drive a member to repeatedly open and close a flow of gas in a pulse manner at frequencies greater than 10 Hz (Abstract, Column 1 Lines 6-25).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate the vibratory pulses in the method of Kosmin utilizing the pulse nozzle of Suto. The motivation to do so would have been to improve the capacity of the apparatus at a low temperature (Suto Column 1 Lines 6-10).

Allowable Subject Matter

23. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach or fairly suggest a method of exchanging a first fluid within a gel with a second fluid, wherein both fluids are supercritical fluids, comprising applying pulses of pressure to the gel and both fluids.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2,427,348	09-1947	Bond et al.
US 5,207,814	05-1993	Cogliati et al.


25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Kugel whose telephone number is (571) 272-1460. The examiner can normally be reached 6:00 AM – 4:30 PM Monday - Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJK
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RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700